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(54) Heated boots and shoes

(57) A boot or shoe is heated by means e.g. of an electrical heating element (2).

So that the boot or shoe can impart a gentle and sustained warmth to the foot of the user for a reasonable length of time, the heating element (2) is sandwiched between heat accumulator means (6, 7) which store the heat generated by the heating element (2).

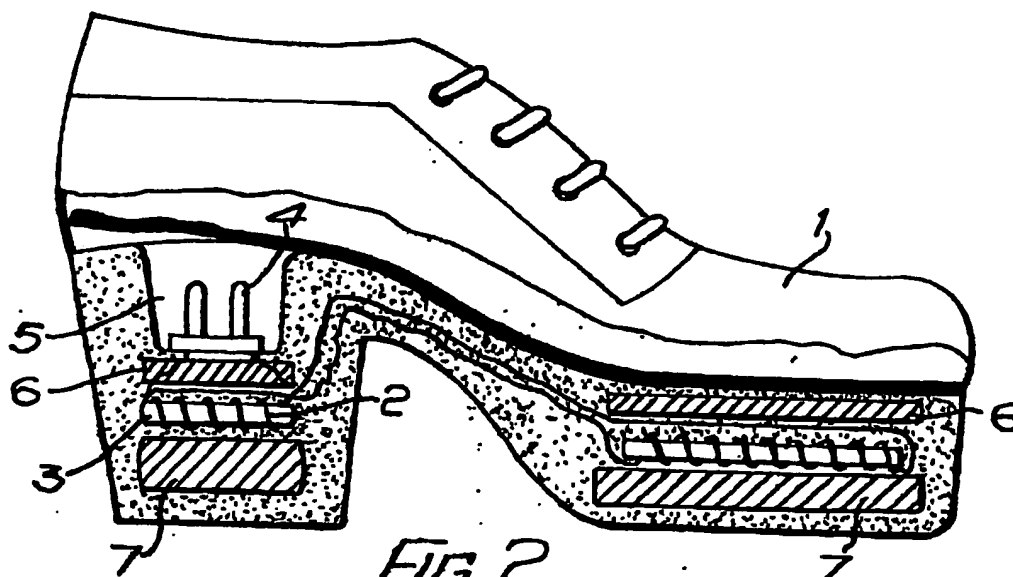


FIG. 2

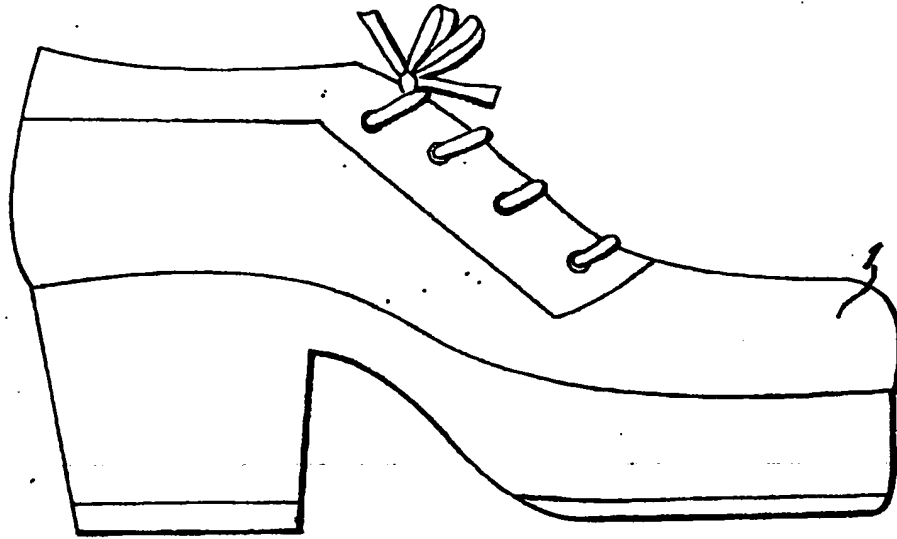


FIG. 1

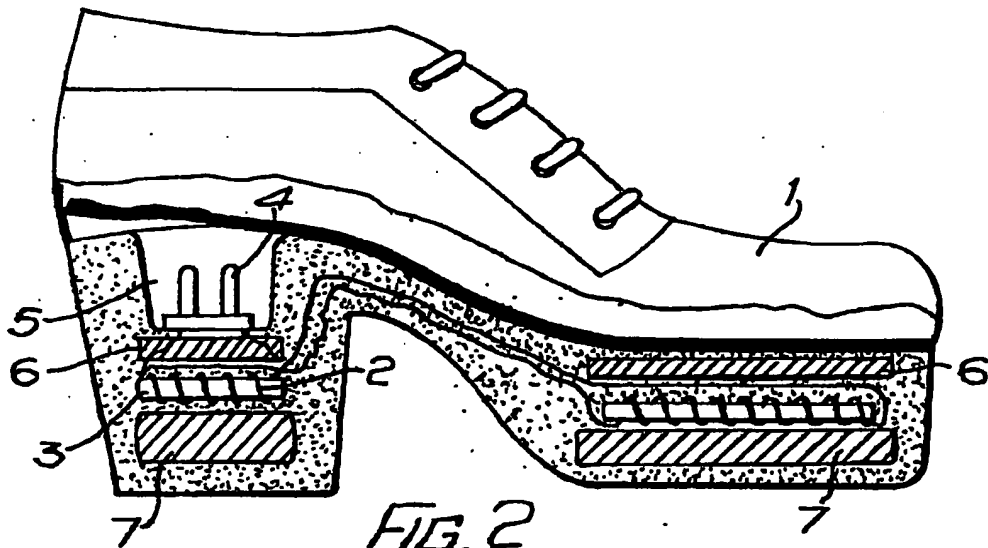


FIG. 2

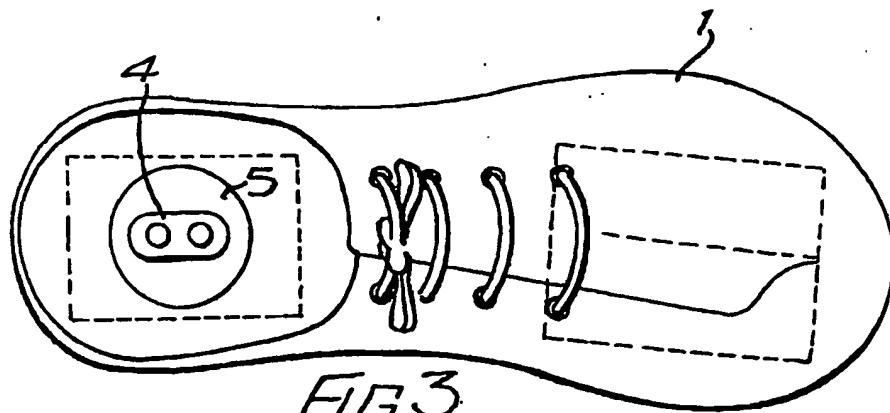


FIG. 3

SPECIFICATION

Heated boots and shoes

5 The invention relates to heated boots and shoes.
It is known to provide boots and shoes heated in various ways, as for example by the provision of electric heating elements. It is also known to provide boots and shoes constructed of various heat insulating materials in an attempt to retain the heat of the users foot, particularly in very cold climates and where the user must be protected against cold for a prolonged period of time. However, all such prior constructions have had drawbacks of one kind or another. Some have been bulky and impractical. Others have failed to provide a gentle and sustained warmth to the foot of the user for any reasonable length of time.

It is the object of the present invention to at least alleviate the drawbacks referred to and to provide a heated boot or shoe structure which is able to impart during a relatively long period of time a pleasant heat benefit so as to adequately heat the foot of the user even in very cold conditions.

25 According to the invention, a boot or shoe is provided with means for heating at least the sole area thereof and provided also with a heat accumulator means which sandwich the heating means and store the heat generated by said heating means, the arrangement being such that heat is imparted to the foot of the wearer over a relatively long period of time. The heating means may be constituted by an electrical resistance and in this case an electrical connector will preferably be provided in a cavity in the heel for the connection of a source of electricity. Electrical resistance will preferably be provided in both the sole portion and the heel portion of the boot or shoe, the two resistances being connected together electrically, either in series or in parallel. 40 The or each electrical resistance may be wrapped around a core of refractory material. The heat accumulator means may comprise a layer of electrically insulating material having also good heat storage capacity, this layer of material being provided between the heating means and the foot of the user. The heat accumulator means may also comprise a second layer of heat insulating material provided between the heating means and the underside of said boot or shoe, said second layer preferably being considerably thicker than the first mentioned layer of electrically insulating material.

In order that the invention may be fully understood and readily carried into effect, the same will now be described, by way of example only, with reference to the accompanying drawings, of which:—

Fig. 1 shows, diagrammatically and as a lateral view, a heated boot embodying the invention;

Fig. 2 illustrates the same boot partly in section; 60 and

Fig. 3 shows the same boot in plan view.

Referring now to the drawings the heated boot

generally indicated 1 includes internally, both in the region of the sole and of the heel, a heating element constituted by a heat source comprising an electrical resistance 2 wound on a shaped core 3 manufactured from a refractory and electrically insulating material.

The electrical resistance 2 is electrically connected 70 with a male electric plug 4 which is housed in a cavity 5. During normal use of the boot, the cavity is covered by a loose inner sole of the boot.

Corresponding to the shape of that part of the boot in which the said electrical heating element is provided, and together in effect corresponding to the shape of the entire boot there are provided respective heat accumulator means constituted by a layer 6 of electrically insulating material having a high thermal capacity. The latter has the main function of 80 internally storing the heat generated by the electrical resistance 2, so as to be able to give up the stored heat to the user's foot during a relatively long period of time.

The boot also includes a second layer 7 of electrically insulating material and this also functions as a heat insulator. The layer 7 is provided to correspond substantially to the shape of the lower portion of the sole end of the heel, and it is its function to prevent the dispersion of heat towards the exterior of the 90 boot. It is substantially thicker than the heat insulating layer 6.

The employment of the boot described is extremely simple. Initially, the user heats the boot by connecting the electric plug 4 to a standard electrical 95 socket, thus feeding the electrical resistances 2 which generate a large quantity of heat within a short period of time.

The heat generated is, in practice, absorbed and accumulated by the layer of insulating material having a high thermal capacity 6, which operates as a thermal accumulator. After only a few minutes, the user may disconnect the electrical connection of the resistance 2 and put on the heated boots.

Thus arises the considerable advantage that the 105 heat which is accumulated in the layer 6 is gradually and slowly imparted to the foot of the user as a gentle warmth. The user is able to enjoy a beneficial and pleasing heating action which guarantees comfort even in the case of particularly severe climates.

110 The heating action, due to the accumulator heat, has been found to last for several hours. Thereafter, the user may again proceed to heat the boot for further use.

Various modifications may of course be made. For 115 example, although the embodiment is a boot the invention may be applied also to a shoe. It will be understood that it is not essential for the electrical resistances to be provided in both the sole and heel portions of the boot or shoe concerned. It may be found that it is sufficient for the boot or shoe to be heated in the region of the sole portion only. On the other hand it may be found more advantageous for the electrical resistance to be provided only in the sole portion but for the overlying electrically insulat-

ing and heat storage layer to extend rearwardly into the region of the heel to disperse the available stored heat throughout the entire boot or shoe. It is not essential for the means for heating the boot or shoe to be constituted by one or more electrical heating element. Other sources of heat which could be employed are hot water and other analagous heat generating means.

CLAIMS

- 10 1. A boot or shoe provided with means for heating at least the sole area thereof and provided also with a heat accumulator means which sandwich the heating means and store the heat generated by said heating means, the arrangement being such that
15 heat is imparted to the foot of the wearer over a relatively long period of time.

2. A boot or shoe according to claim 1, in which the heating means are constituted by an electrical resistance.

- 20 3. A boot or shoe according to claim 2, in which an electrical connector is provided in a cavity in the heel for the connection of a source of electricity.

4. A boot or shoe according to either one of claims 2 and 3, in which electrical resistances are
25 provided in both the sole portion and the heel portion thereof, the two resistances being connected together electrically, either in series or in parallel.

5. A boot or shoe according to any one of claims 2 to 4, in which the or each electrical resistance is
30 wrapped around a core of refractory material.

6. A boot or shoe according to any one of the preceding claims, in which the heat accumulator means comprise a layer of heat insulating material having also good heat storage capacity, this layer of
35 material being provided between the heating means and the foot of the user.

7. A boot or shoe according to claim 6, in which the heat accumulator means comprise a second layer of heat insulating material provided between
40 the heating means and the underside of said boot or shoe.

8. A boot or shoe according to claim 7, in which the second layer of heat insulating material is considerably thicker than the first mentioned layer of
45 heat insulating material.

9. A boot or shoe substantially as hereinbefore described with reference to and as illustrated by the accompanying drawings.